HLWYM HEmails

From: Hakan Basagaoglu
Sent: Tuesday, October 10, 2006 6:30 PM
To: Scott Painter; David Pickett; Paul Bertetti
Subject: RE: Key messages for tech exchange

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Regarding the colloid mobility, it appears to me that based on the DoE's approach the colloids will *likely always* increase radionuclide mobility (true for all radionuclides) only in the UZ, because (a) filtration was allowed only in matrix, (b) colloids were presumably always stable across the UZ, (c) film-straining and chemical immobilization were excluded in UZ TSPA (highly conservative approach) .

However, depending on Ionic-Strength (IS), pH, and T conditions, the colloids can potentially be *unstable* in WP. Because, presumably 90-99% of Am and Pu are to be sorbed onto Fe-oxy-hydroxide colloids irreversibly, mobility of these *irreversibly* sorbed radionuclides (Am, Pu) will decrease if/when physicochemical conditions prevails unstable conditions for the colloid tp (colloids will be filtered out or sorbed onto immobile surfaces while carrying irreversibly sorbed radionuclides on their surfaces).
However, the mobility of all other *reversibly* sorbed radionuclides onto colloids (mostly on smectite, glass, and a small portion onto Fe-colloids) should increase by the colloidal tp, even when colloids are unstable (they can desorb from colloids and move back to solution).

Along the invert, the condition is always unfavorable for colloid stability; therefore, the colloid mobility will decrease for irreversibly sorbed Pu and Am sorbed on Fe-colloids.

I have not seen detailed discussion on the stability of the colloids in the SZ, but the SZ model accommodates irreversibly sorbed radionuclides onto Fe-colloids. If physicochemical conditions prevails unstable conditions for the colloid transport in the SZ, then the mobility of Am and Pu attached irreversibly onto Fe-colloids would also decrease in SZ.

Briefly, I believe the colloids will increase the radionuclide mobility as long as they're stable, otherwise they may reduce the mobility of irreversibly sorbed radionuclides (Am, Pu) -attached onto immobilized/unstable colloids-.

Hakan

-----Original Message-----
From: Scott Painter [mailto:spainter@cnwra.swri.edu]
Sent: Tuesday, October 10, 2006 2:51 PM
To: dpickett@cnwra.swri.edu; 'Paul Bertetti'; 'Hakan Basagaoglu'
Subject: RE: Key messages for tech exchange

Looks good to me. I especially like the phrase "unreasonable irreversible accumulations of radionuclides".

Regarding the phrase "the DOE abstractions should not result in decreased radionuclide mobility": if DOE can demonstrate it, then would we really have a problem with an abstraction that allows colloids to reduce mobility?

Scott

-----Original Message-----
From: David Pickett [mailto:dpickett@cnwra.swri.edu]
Sent: Tuesday, October 10, 2006 2:34 PM
To: Scott Painter; Paul Bertetti; Hakan Basagaoglu
Subject: Key messages for tech exchange

John Bradbury asked me to draft text for a "key messages" letter to DOE in advance of the Nov 2 tech exchange. Please take a look. It doesn't have to have all the details contained in our list of questions, but it should do a good job of touching on the high-level points.

I'm sending a draft to John at the end of the day, but your comments are welcome after that time.

David

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Subject: RE: Key messages for tech exchange
Sent Date: 10/10/2006 6:30:20 PM
Received Date: 10/10/2006 6:30:21 PM
From: Hakan Basagaoglu

Created By: hbasagaoglu@cnwra.swri.edu

Recipients:
"Scott Painter" <spainter@cnwra.swri.edu>
Tracking Status: None
"David Pickett" <dpickett@cnwra.swri.edu>
Tracking Status: None
"Paul Bertetti" <pbertetti@cnwra.swri.edu>
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MESSAGE	3188	10/10/2006 6:30:21 PM

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